

Hitachi Zosen  
INOVA

Zistersdorf / Austria  
Waste to Energy Plant



Turnkey Plant 27 t/h, 57.8 MW

## Zistersdorf Waste to Energy Plant – a Centralised Facility for the Thermal Treatment of Supra-Regional Waste

The Zisterdorf Waste to Energy (WtE) plant is proof of a successful co-operation between waste management and waste treatment. The facility, located 60 km north-east of Vienna, is capable of treating up to 135,000 tons a year of domestic solid waste and processed waste while at the same time exporting sufficient electricity to power more than 25,000 homes.

•A•S•A• (Abfall Service AG) of Austria, a subsidiary of Fomento de Construcciones y Contratas S.A. of Spain, is one of the leading waste management companies in Central Europe. Besides waste collection services, ASA also operates several material recycling and biological treatment facilities. The WtE plant in Zistersdorf is the first facility of this kind for ASA and is further proof of the expansion policy with regard to environmentfriendly technologies.

Hitachi Zosen Inova (HZI), has assumed the role of an EPC contractor and is responsible for the entire turnkey facility. Construction time was 2 years and commissioning began in January 2009. Commercial operation commenced in April 2009.

### | Sophisticated Logistics for Maximised Availability

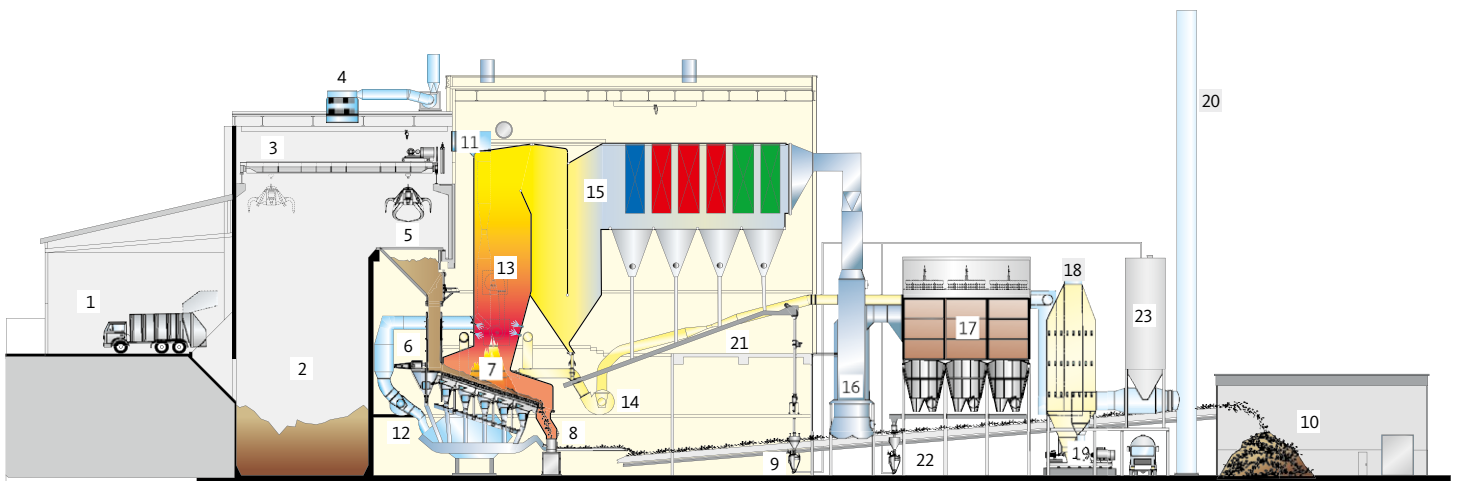
The majority of the waste, approximately 70%, is brought by train from remote material recycling facilities or transfer stations directly to the plant. As a consequence, road traffic is kept low. Nonrecyclable processed waste from material recycling facilities is delivered to the plant in plastic wrapped bales. Four tipping bays ensure short waiting periods and two independent waste cranes maintain the smooth feeding of the process train.

### | Modern Technology for Safe, Ecological and Economical Energy Recovery

The 57.8 MW thermal treatment plant consists of a single process train with a capacity to treat 20 t/h of waste. The waste is combusted on a three-row five-zone reciprocating grate, of which the first two zones are water-cooled. A fully integrated control system allows for rapid adjustments of combustion conditions for the safest and most efficient operation possible.

This process reduces the volume of the waste by 90%; the remaining bottom ash is treated adjacent to the site for further use in the road construction industry. Ferrous metals are then separated for recycling and treatment residues are shipped off site for disposal in sealed containers via railway.

A four-pass horizontal boiler recovers energy from the flue gases. The dry air pollution control system ensures safe compliance with the emission limits defined by the authorities. In fact, these limits are well below EU emission standards and must be fulfilled independent of the waste composition.



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#### Waste Receiving and Storage

- 1 Delivery hall
- 2 Waste pit
- 3 Waste crane
- 4 Waste pit ventilation at plant standstill

#### Combustion and boiler

- 5 Feed hopper
- 6 Ram feeder
- 7 HZI Grate
- 8 Bottom ash extractor
- 9 Bottom ash conveyer
- 10 Bottom ash storage hall

- 11 Primary air intake
- 12 Primary air fan
- 13 Secondary air fan
- 14 Flue gas recirculation fan
- 15 Four-pass boiler

#### Flue gas treatment

- 16 Dry reactor
- 17 Fabric filter
- 18 SCR catalyst
- 19 Induced draft fan
- 20 Stack

#### Residue handling and treatment

- 21 Ash conveying system
- 22 Residue conveying system
- 23 Residue silo

The flue gas treatment comprises two stages: After injection of sodium bicarbonate and lignite coke, acid gas reaction products, adsorbed dioxins and heavy metals as well as particles are separated in a fabric filter. Thereafter NO<sub>x</sub> levels are reduced in a low temperature Selective Catalytic Reduction (SCR) system.

#### Waste to Energy

The Zistersdorf WtE plant uses the thermal capacity of the treated waste fractions to generate electricity. 12.8 MW of electrical power is supplied to the national grid, an amount sufficient to cover the needs of more than 25,000 homes.

**General Project Data**

Owner and operator	•A•S•A• Abfall Service Zistersdorf GmbH
Start of operation	2009
Total investment	EUR 80 Mio.
Scope of HZI	General contractor for entire plant, including civil works
Plant design	Hitachi Zosen Inova AG

**Technical Data**

Annual capacity	135,000 t/a
Number of lines	1
Throughput per line	17.3 t/h (nom.), 20 t/h (max.)
Calorific value of waste	9 MJ/kg (min.)–15 MJ/kg (max.)
Thermal capacity	57.8 MW
Waste type	Domestic solid and bulky waste, pre-sorted waste

**Waste Handling**

Waste pit capacity	10,000 m <sup>3</sup>
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**Combustion System**

Type	HZI Grate
Grate design	3 rows with 5 zones per row
Grate size	Length: 10.25 m, width 6.60 m
Grate cooling	First two zones water-cooled (Aquaroll®)

**Boiler**

Type	Four-pass boiler, horizontal
Steam quantity per line	66.0 t/h
Steam pressure	42 bar
Steam temperature	405 °C
Flue gas outlet temperature	190 °C

**Flue Gas Treatment**

Concept	Sodium bicarbonate-process, low temperature SCR
Flue gas volume per line	101,400 m <sup>3</sup> /h

**Energy Recovery**

Type	Extraction-condensation turbine
Electric power output	14.0 MW (max. generator capacity)

**Residues**

Bottom ash	37,000 t/a
Flue gas treatment	5,300 t/a

**Special Features**

	Station for rail delivery of waste and removal of residues
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